

DOCUMENT RESUME

ED 276 841

CE 045 907

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TITLE Factors Related to Adoption and Non-Adoption of Technical and Organizational Recommendations by Farmers Involved with Societe de Developpement du Cacao (SO.DE.CAO) in Cameroon. A Research Summary.
INSTITUTION Florida Univ., Gainesville. Dept. of Agricultural and Extension Education.
PUB DATE Dec 86
NOTE 31p.
PUB TYPE Reports - Research/Technical (143)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adults; Agricultural Production; Demography; Developing Nations; Educational Needs; *Extension Education; *Farmers; *Farm Management; Field Crops; *Pests; Program Attitudes; *Program Effectiveness; Program Improvement
IDENTIFIERS *Cameroon; *Cocoa Farmers

ABSTRACT

In order to promote cocoa production and assist cocoa farmers in overcoming diseases in this crop, the government of Cameroon created an experimental corporation called Societe de Developpement du Cacao (SO.DE.CAO) in 1974. This organization functioned much like an extension service to provide information about crop production and disease control. A study was conducted to determine the extent to which demographic and situational characteristics and farmers' knowledge of black pod disease control and capsid control were related to adoption and non-adoption of SO.DE.CAO's recommendations. A sample of 413 cocoa farmers who participated in the program for 10 years was interviewed. These cocoa farmers were mostly married males with little education who had small farms and used mostly family labor. Almost all of the farmers said they knew how to spray for black pod disease and which pods to remove and that such practices were complementary. Only a few farmers knew that increasing the amount of insecticide was ineffective. Although the farmers knew that systematic treatment of all cocoa farms protected from capsid, relatively few knew the appropriate time for spraying. Based on the findings of the study, suggestions were made for further extension activities focusing on the use of recommended fungicide dosage, the mixing of different fungicides, and complementary practices; further education about capsid treatment; and further contact with those farmers who had the demographic characteristics associated with non-adoption of practices. (KC)

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ED276841

A RESEARCH SUMMARY

FACTORS RELATED TO ADOPTION AND NON-ADOPTION OF TECHNICAL AND
ORGANIZATIONAL RECOMMENDATIONS BY FARMERS INVOLVED WITH
SOCIETE DE DEVELOPPEMENT DU CACAO (SO.DE.CAO) IN CAMEROON

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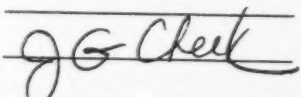
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ACKNOWLEDGEMENTS

The authors would like to express gratitude to the University Center of Dschang and the International Programs office at the University of Florida, for providing funds necessary for this study. Gratitude is also extended to cocoa farmers of the area surveyed for their disposition during the interview without which this study would not have been possible. Finally, but not the least, the participation of the seven students of the National Advanced School of Agriculture of the University Center of Dschang and the extension field workers as well as all SO.DE.CAO personnel is greatly appreciated.

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RESEARCH SUMMARY

INTRODUCTION

Cameroon, like most developing countries, relies on agriculture. Its national economy depends widely on agricultural products especially on export crops such as coffee, rubber, timber, cotton, and cocoa. Cocoa is the principal export crop and accounts for more than 30% of the total export of the country. Cameroon ranks as the fifth largest cocoa producer in the World behind Ghana, Nigeria, Brazil, and the Ivory coast.

In order to promote cocoa production and assist cocoa farmers overcome diseases in this crop, the government created an experimental cocoa development corporation called Societe de Developpement du Cacao (SO.DE.CAO) in 1974. Since 1974, cocoa farmers have been exposed to many cultural practices as a result of the extension activities of SO.DE.CAO. Despite this effort, certain farmers seem resistant to new practices and are still practicing the traditional methods. SO.DE.CAO will expand to other cocoa areas in the country. An analysis of different factors such as knowledge acquired by farmers, situational characteristics, demographic or socioeconomic characteristics seems to be very important for understanding the factors that hinder some farmers from adopting the practices recommended by SO.DE.CAO and facilitate the adoption by other farmers.

Background for the Study

History and Introduction of Cocoa in West Africa

"The cocoa tree, whose pods yield the cocoa beans of commerce, is a native of the lowland tropical forest of the upper Amazon Basin of South America and also of the coastal strip west of the Andes, where it grows as an under-storey species beneath the tall upper-storey forest trees. Besides the spread of cocoa cultivation in suitable areas in Spanish colonies in the New World, notably in Central America and the Northern parts of South America such as Ecuador and Venezuela, cocoa was also grown in the islands of the West Indies. Later in 1754, it was also grown in the Bahia area of Brazil, then a Portugese colony" (Are and Jones, 1974, pp.4-5).

Are and Jones (1974) stated: "In 1822, seeds were brought from Bahia to the Portugese island of Sao Tome off the West coast of Africa where they were planted and flourished. Cocoa also soon became well-established on the neighbouring island of Principe, and eventually those two islands became, for a short time at the beginning of the twentieth century (until 1910), the biggest producers of cocoa in West Africa" (p.6). The cocoa plant was next introduced, about 1840, to the island of Fernando Po. Fernando Po is very important in the history of cocoa in West Africa because it was from this island that the seeds were brought to many West African countries to establish cocoa farms. Ghana was the first country to receive seeds from Fernando Po in 1815. Nigeria received seeds in 1874 from the same island. The Ivory Coast received its first seeds later on in 1895.

Introduction and Development of Cocoa in Cameroon

Are and Jones (1974) also reported: "In Cameroon, cocoa was introduced in 1892 by the Germans. Further, plants were imported from South America, the West Indies and Sao Tome for trial in the botanic gardens which the Germans had established. Much later, the local farmers became interested, so that the crop today comes almost entirely from African-owned farms, and in total production, the country ranks fourth in West Africa" (p.8).

Economic Significance of Cocoa

In Cameroon, cocoa beans represented 23% of the total exports and cocoa by-products 5.4% in 1970/71 (Ministry of Economics Affairs and Planning, 1976). Further, in 1974/75, cocoa beans represented 27.6% of the total exports and cocoa by-products 5.4% (Ministry of Economics Affairs and Planning, 1981). Thus, cocoa production contributes more than 30% of the total exports of the country. This percentage has maintained cocoa at the top of the total exports of the country until 1980 when Cameroon started to export crude oil (28.14% of the total export against 13.58% for cocoa beans and 6.97% for cocoa by-products). Nevertheless, cocoa continues to occupy a predominant place among staple products sold abroad.

Extension Service and SO.DE.CAO

In Cameroon, the agricultural extension programs have traditionally been under the responsibility of the Ministry of Agriculture. A few years ago, some governmental organizations and integrated rural development corporations started to take over some extension programs in

their specific areas and crops for which they focused on. In the central government, the extension program lies with the Department of Agriculture which is in charge of input supplies, pest and disease control, seed multiplication, and soil conservation.

SO.DE.CAO is one of the governmental organizations which have undertaken extension programs in its areas of activity. It is a cocoa development corporation created by presidential decree 74/373 of April 19, 1974. This new organization replaced a previous institution that dealt with cocoa farmers called Zones d'Actions Prioritaires Integrees du Centre Sud (Z.A.P.I Centre Sud). It was placed under the supervision of the Ministry of Agriculture. It is funded by the government but has financial autonomy to avoid delays in executing its programs because of administrative procedures in the governmental hierarchy. Tchala (1982) listed the purpose of SO.DE.CAO as stated in the above decree:

- 1: To execute the regeneration projects and to open new cocoa plantations;
2. To re-organize the socio-economic situation of the cocoa producing regions. To this end, it shall in particular:
 1. Execute direct technical projects;
 2. Undertake projects of support, control and coordination connected with marketing, credit facilities and supplies;
 3. Organize training programmes and refresher courses for the technical education of farmers;
 4. Initiate programs aimed at establishing, organizing and supervising cooperative and pre-cooperative institutions;
 5. Undertake projects aimed at linking cocoa cultivation with the development of food crops;
 6. The corporation may also be responsible for organizing research, investigations and operations in the sphere of cocoa production. It shall be duly consulted on all research and development projects connected either with cocoa production as a whole or with the area in which it is to operate. (p.259-260)

Need for the Study

Cocoa is the principal export crop of the country. For the cocoa growers, it is also the most important cash crop which provides a significant income when well managed.

SO.DE.CAO had the responsibility to cover one-fifth of the cocoa production area in Cameroon and demonstrate new methods among farmers. To achieve its goals, an extension service characterized by a high ratio of extension field workers to farmers was created by SO.DE.CAO. The extension service is looked to as a logical and effective means of conducting these improvements. Williams (1971) stated that, "The extension service was created on the assumption that whatever people do, they can do better through education. Through education, they can produce better products, build better communities, achieve a richer quality of life, and attain a better satisfaction in doing so" (p.1-2).

As far as cocoa farmers in Cameroon are concerned, this education is given through the extension service, and specifically by the SO.DE.CAO extension service in certain areas. One extension field worker deals with 200-250 farmers in a relatively small area compared to a ratio of almost one to 1000 under the traditional extension service of the Ministry of Agriculture.

The government recognized that one constraint to the adoption of new techniques might be the availability of inputs. In an attempt to overcome this constraint, the government's policy was to distribute some inputs to farmers free of charge such as fungicides, insecticides, materials for cocoa nurseries, plastic bags, and hybrid pods.

Despite this effort, certain farmers seem resistant to new practices and are still practicing the traditional methods. Although much research has already been done in other domains to find the relationship between attributes of innovations, demographic and situational characteristics of farmers, and the adoption of innovations, little is known about factors associated with adoption of cocoa practices by cocoa farmers. This study will provide the opportunity to confirm or refute the applicability of those findings to the Cameroonian cocoa farmers.

Purpose and Objectives

The central purpose of this study was to determine the extent to which demographic and situational characteristics, knowledge of farmers concerning black pod disease control and capsid control were related to adoption and non-adoption of technical and organizational recommendations by farmers involved with SO.DE.CAO (Kamga, 1986). To accomplish this purpose, the specific objectives of this study were:

1. To develop a demographic profile of cocoa farmers encompassing age, sex, marital status, educational level, and family size.
2. To develop a profile of situational characteristics of the cocoa farmers encompassing the number of cocoa fields owned by a farmer, size of the cocoa farm, availability of labor, investment in outside labor, cocoa income, percentage of cocoa income in relation to the total income of farmer, and equipment of farmer.

3. To determine the knowledge of farmers concerning control of black pod disease and control of capsid.
4. To determine the adoption of recommendations concerning black pod disease control, capsid control, spraying a cocoa nursery, and removing weeds from the cocoa farm.
5. To determine the association between demographic characteristics, situational characteristics, and knowledge of farmers regarding control of black pod disease and capsid and the adoption of the recommended practices.

RESEARCH PROCEDURE

The central purpose of the study was to determine the extent to which demographic and situational characteristics, knowledge of cocoa farmers concerning black pod disease control and capsid control were related to adoption and non-adoption of technical and organizational recommendations by farmers involved with the Societe de Developpement du Cacao (SO.DE.CAO).

This chapter reports the research procedures employed to accomplish the major purpose of the study and is divided into the following sections: (1) population and sample; (2) instrumentation; (3) data collection; and (4) statistical analysis.

Population and Sample

The population for this study consisted of cocoa farmers in three geographical sectors that had been working with SO.DE.CAO for 10 years:

Nyong et So'o; Mefou-Mfoundi; and Dja et Lobo. Each of the above sectors had many subsectors, each headed by a technical assistant. Only the subsectors which had been working with SO.DE.CAO for at least 10 years were taken into account in this study. Each technical assistant had under his supervision 7 to 10 extension field workers. Each extension field worker had 2 to 4 cooperative centers of between 70 to 250 farmers each.

The stratified sample used for the study was constituted as follows. In the sectors of nyong et So'o and Mefou-Mfoundi, 3 of the 4 subsectors that met the 10 year requirement were randomly selected. In the sector of Dja et Lobo, only the subsector of Zoetele met the requirement of 10 years and therefore was selected. Within each subsector, extension field workers were randomly selected. The cooperative centers under the responsibility of the selected extension field workers were also randomly selected. Depending upon the number of farmers in the cooperative center, the number drawn varied from 5 to 15 per cooperative center.

In order to achieve a confidence level of 95%, a sample of 376 individuals was needed (Anderson and Berdie, 1978). A sample of 413 cocoa farmers drawn from the list of 20,542 farmers slightly exceeded the minimum sampling requirement. Table 1 indicates the sectors, the subsectors selected, and the number of cocoa farmers randomly selected for the sample investigated.

Table 1
Sectors, Subsectors, and Number of Cocoa Farmers Selected

Sectors	Subsectors	Number of Cocoa Farmers Selected
Nyong et So'o	Mbalmayo I	150
	Mbalmayo II	10
	Mengueme	40
Mefou-Mfoundi	Mfou	91
	Ngoumou	26
	Bikok	48
Dja et Lobo	Zoetele	49
		413

Instrumentation

The instrument used to gather data for this study was a 28-item questionnaire designed to collect information, through face-to-face interview, about selected demographic and situational characteristics of cocoa farmers, knowledge of cocoa farmers about selected practices and the adoption of recommended practices. The face-to-face interview was determined to be the most appropriate method for obtaining the required data because of the illiteracy of some farmers and because not all farmers could be reached by mail.

The initial draft, a 56-item questionnaire, was sent to other faculty members of the Department of Rural Education of the National Advanced School of Agriculture for evaluation. Each faculty member was asked to evaluate the instrument for simplicity, clarity, relevance, content, and time necessary to administer. Based upon their comments,

a number of modifications were made in the initial instrument.

The resultant 28-item questionnaire (Appendix) was divided into four sections. The first section was designed to obtain data regarding selected demographic characteristics of age, sex, marital status, educational level, and family size. The second section was designed to obtain data regarding selected situational characteristics of number of cocoa fields owned by a farmer, size of the cocoa farm, labor availability, cocoa income, investment in outside labor, ownership of sprayer, and involvement in other activities generating additional income besides cocoa production. The third section was designed to obtain data concerning the knowledge of farmers of black pod disease control and capsid control. The fourth section was designed to obtain data regarding the adoption of seven key practices. The practices identified were black pod disease control, spraying all cocoa fields, using the recommended dosage for black pod disease control, capsid control, participation in collective capsid control, spraying cocoa nursery, and removing weeds from cocoa fields.

Data Collection

The general level of education of the majority of cocoa farmers is very low. Therefore, the interview technique, although very time consuming, was seen to be the sole efficient means of obtaining accurate data and a high rate of response. Seven students in their second and fourth year of study at the National Advanced School of Agriculture were trained to conduct interviews and complete the

questionnaire. The face-to-face interviews were made in the field by the researcher and seven students from June 6, 1984, to July 7, 1984. Prior to the beginning of the survey, a substitute for each farmer was randomly drawn from the same cooperative center and was interviewed if the selected farmer was unavailable because of death, sickness, or travel out of the village. Four hundred and thirteen farmers were interviewed.

Statistical Analysis

The data items were transferred from the completed questionnaire to IBM key punch cards by the University of Florida Data Processing Center. Each card was then verified for its correctness.

The data for objectives 1 and 2 were analyzed for frequency, percentage, mean, standard deviation, median, and mode to describe the demographic and situational characteristics of cocoa farmers.

The data for objective 3 were analyzed for frequency and percentage to describe the knowledge of cocoa farmers concerning black pod disease control and capsid control. The data for objective 4 were analyzed for frequency and percentage to describe the adoption of black pod disease control, capsid control, spraying the cocoa nursery, and removing weeds from cocoa fields.

The data for objective 5 were analyzed for association between demographic and situational characteristics and knowledge of farmers, and the adoption of recommended practices.

For the measure of association between variables, many statistical techniques are suggested in the literature among which the Chi-Square test (Liebetrau, 1983) and the Pearson correlation coefficient (Agresti, 1984). The Chi-Square analysis is used to determine whether observed proportions differ significantly from theoretically derived expected proportions. The Pearson correlation coefficient is used to analyze the association between continuous variables. Pearson correlation coefficient and Chi-Square analyses were selected as the appropriate statistical procedures because the analyses were limited to the measure of association. The level of significance was 0.05 for both the Chi-Square test and the Pearson correlation coefficient.

Major Findings

The major findings from these analyses are summarized as follows:

Objective 1

1. Cocoa farmers tended to be married males about 50 years old.
2. Cocoa farmers tended to have a relatively low educational level, 22% could not read and write and only 19.6% had attended secondary school with only 4.8% receiving a diploma.
3. A vast majority of the cocoa farmers had one spouse and only 10% were polygamous. Almost 60% of the cocoa farmers had three or more children.

Objective 2

1. Over 80% of the cocoa farmers had one or two cocoa fields and the average farm size was 3.08 hectares.

2. Over 75% of the cocoa farmers had one or two people in the family labor force and very few hired outside labor.
3. Cocoa farmers invested a very small amount of money in outside labor, only 7% invested more than FCFA 40,000 annually.
4. A majority of the cocoa farmers had 76% or more of their total income from cocoa and had relatively low incomes. Over three-fourths had an annual income less than FCFA 300,000 from cocoa production.
5. Cocoa farmers had the basic equipment needed for black pod disease control, 77% had a sprayer in working condition.

Objective 3

1. Over 90% of the cocoa farmers said they knew how to perform black pod disease control, 85% knew which pods to remove, almost 90% knew the correct dosage of fungicide to use for black pod disease, and almost 64% knew that removing black pods and spraying were complementary.
2. Only 26% of the cocoa farmers knew that increasing the number of sachets of fungicides per sprayer was inefficient in controlling black pod disease and only 19% knew that mixing different fungicides was inefficient.
3. Only 28% of the cocoa farmers knew the time of abundance of capsid and only 29% knew the appropriate time for capsid treatment. Nevertheless, 96% of the cocoa farmers knew that systematic treatment of all cocoa fields better protected all cocoa farms from capsid.

Objective 4

1. Eighty-five percent of the cocoa farmers practiced black pod disease control and sprayed their fields. Also 90% knew the correct dosage to use for black pod disease control, but only 53% were using the recommended dosage.
2. Over 90% of the cocoa farmers participated in collective capsid control.
3. Over two-thirds of the cocoa farmers regularly sprayed their cocoa nursery and more than three-fourths removed weeds from all their cocoa fields.

Objective 5

The adoption of the seven key recommended practices were examined to determine the association between adoption and demographic characteristics, situational characteristics, and knowledge of black pod disease control and capsid control. The following were the major findings:

1. Age was only significantly correlated with one recommended practice, spraying the cocoa nursery, and the correlation was weak.
2. There was an association between the adoption of six of the seven recommended practices and sex. There was not a significant association between sex and participation in collective capsid control. Males tended to adopt the six practices more frequently than females.

3. There was an association between the adoption of five of the seven recommended practices and marital status. The widowed tended to adopt less frequently than other groups.
4. There was an association between the adoption of capsid control and spraying the cocoa nursery and the level of education. Farmers with a high level of education tended to adopt these two practices more frequently than those with less education. Findings on the other five practices indicated no significant association with the level of education.
5. The adoption of five out of seven recommended practices was associated with the number of spouses. No association was found between spraying all cocoa fields and participating in collective capsid control and the number of spouses.
6. There was an association between the adoption of practices related to black pod disease control, capsid control, and spraying the cocoa nursery and the number of children. There was no significant association with the other four practices with the number of children.
7. There was no association between the adoption of five recommended practices and the number of cocoa fields. Only the adoption of practices related to black pod disease control and capsid control were associated with the number of cocoa fields.
8. There was no association between the adoption of six recommended practices and the size of the cocoa farm. Only the practice of spraying the cocoa nursery was associated with the size of the

cocoa farm.

9. There was an association between using the recommended dosage for control of black pod disease and spraying the cocoa nursery and the size of family labor force. Farm families with more than one person tended to more frequently adopt these practices than farm families with only one person. No significant association was found with the other five recommended practices.
10. There was no association between the adoption of the seven recommended practices and the amount invested in outside labor.
11. There was an association between the adoption of black pod disease control practices and the ownership of a sprayer. Farmers who owned a sprayer tended to adopt these practices to a greater extent than those who did not have a sprayer. No association was found between the ownership of a sprayer and the adoption of spraying the cocoa nursery.
12. There was an association between the overall adoption of the seven recommended practices and the percentage of income derived from cocoa. Farmers who had more than 75% of their total income derived from cocoa tended to adopt all the practices more frequently than farmers in other groups.
13. There was a significant positive correlation between the overall adoption of the black pod disease control and capsid control and the knowledge of the two practices.

Conclusions

The following conclusions were drawn from the findings of this study:

Objective 1

1. Cocoa farmers constituted a relatively homogeneous group related to demographic characteristics. The majority were married males with one spouse and 50 years old. The level of education of the cocoa farmers was relatively low and one-fifth were illiterate.

Objective 2

1. The average cocoa farm size was small (3.08 hectares) and consisted of one or two cocoa fields.
2. The family labor force was relatively small and very few cocoa farmers invested in outside labor. Those who did so, invested a very small amount of money.
3. The majority of the cocoa farmers derived a high proportion of their income from cocoa and three-fourths had an annual cocoa income of less than FCFA 300,000.
4. Over three-fourths of the cocoa farmers owned a sprayer.

Objective 3

1. Almost all of the cocoa farmers questioned said they knew how to perform black pod disease control, knew which pods to remove, and knew the recommended dosage of fungicide to use for black pod disease control. Most cocoa farmers knew that spraying the cocoa pods was complementary with removing attacked pods from the fields.

2. A very small percentage of the farmers knew that increasing the number of sachets of fungicide per sprayer and mixing different fungicides was inefficient for the control of black pod disease. Therefore, it is concluded that most farmers had an insufficient knowledge of black pod disease control relative to these two practices.
3. Despite the fact that cocoa farmers knew that systematic treatment of all cocoa fields better protected all cocoa farms from capsid, a relatively small percentage knew the time of abundance of capsid and the appropriate time for capsid treatment. Therefore, it is concluded that most farmers had insufficient knowledge of capsid control.

Objective 4

1. Most farmers practiced black pod disease and sprayed their cocoa fields. Only 53% of the cocoa farmers were using the recommended fungicide dosage to control black pod disease; however, 90% knew the correct dosage to use.
2. A vast majority of cocoa farmers participated in collective capsid control, sprayed their cocoa nursery, and removed weeds from their cocoa fields.

Objective 5

1. Sex, marital status, number of spouses, and percentage of income derived from cocoa were associated with the adoption of most recommended practices.
2. The educational level of the cocoa farmers, number of children,

number of cocoa fields, size of the farm, size of the family labor force, and amount of money invested in outside labor were not associated with the adoption of most recommended practices.

3. Age was not correlated with the adoption of recommended practices.
4. Ownership of a sprayer was associated with the adoption of black pod disease control practice and was not associated with spraying the cocoa nursery.
5. Knowledge of black pod disease control and capsid control were associated with the overall adoption of these two practices.
6. The findings of this study tend to support the literature on knowledge, sex, and percentage of income derived from farm. Also, the findings tend to refute the literature on educational level and size of the farm in most recommended practices.

Recommendations

Based on the findings and conclusions drawn from this study, the following recommendations were developed:

1. Based on the fact that many farmers did not know that spraying the cocoa pods and removing attacked pods were complementary, that most farmers did not know that increasing the number of sachets of fungicides per sprayer and mixing different fungicides were inefficient for control of black pod disease, and that 47% of the cocoa farmers were not using the recommended fungicide dosage, it is recommended that further extension activities focus

educational activities on these four aspects of black pod disease control. Specifically, these educational activities should focus on the use of recommended fungicide dosage, the mixing of different fungicides, and the concept of removing both black pods from the field and spraying the cocoa pods are complementary.

2. Based on the fact that most farmers did not know the time of abundance of capsid and the appropriate time for capsid treatment, it is recommended that further extension activities focus on these two aspects of capsid control.
3. Based on the fact that sex, marital status, number of spouses, and percentage of income derived from cocoa were associated with adoption of recommended practices, further extension activities should focus on those farmers with these specific characteristics who tended not to adopt the practices studied.
4. Based on the fact that knowledge of black pod disease control and capsid control were associated with adoption of these practices, further educational activities should continue to emphasize the development of knowledge as well as skill in extension efforts.
5. Based on the fact that the characteristics of the recommended practices as perceived by cocoa farmers were not assessed by this study, it is recommended that further studies focus on the perceived characteristics of the recommended practices and examine their association with adoption of these practices.
6. Results from this should be used in planning other extension educational efforts in Cameroon.

APPENDIX
QUESTIONNAIRE

Sector..... Date.....
Subsector..... Name of investigator:.....
Cooperative Center.....
Name of farmer..... ID number.....

Objective 1: Demographic characteristics of the farmer

1. Sex: Male
 Female
2. Age:
3. Marital status: Married:.... Number of spouses:....
 Divorced....
 Widowed
 Single
4. Number of children under farmer's responsibility:....
5. Educational level of the farmer:
 1. Able to read Yes.... No....
 2. Able to write Yes.... No....
 3. Attended elementary school: Grade level....
 Diploma earned....
 4. Attended secondary school: Grade level....
 Diploma earned....

Objective 2: Situational characteristics of the farm enterprise

6. Number of cocoa fields owned by farmer....

Size of farm: cocoa trees or hectares

Total cocoa production.....Kilograms (Kg)

Cocoa income: Kg X FCFA/Kg = ...FCFA

7. Food crops

Name of the crop	: Production sold	: Value in FCFA
	:	:
	:	:

8. Other activities:

Income source	: Number days/year	: Annual income in FCFA
Palm wine	:	:
Carpentry	:	:
Total	:	:

9. Labor: Number of family workers....

10. Do you hire outside labor?

....Yes

....No

If Yes, why?

1. Limited family labor
2. Illness
3. Very busy, lack of time
4. Other

If No, why?

1. Very expensive
2. Lack of workers in the village
3. Have family workers or can work alone
4. Other (List)

Investment in outside labor

If Yes for question 10, then ask

11. How much do you pay outside workers?

Annual amount in FCFA.....

Equipment

12. Do you have a sprayer?

....Yes

....No

Objective 3: Knowledge of farmers concerning black pod disease control.

13. Do you know how to perform the operation of removing black pods?

....Yes

....No

14. Which black pods need to be completely removed?

....Pods at all levels

....Pods on the branches

....Pods on the trunk

....Pods on the ground

....Don't know

15. What is the dosage recommended by the extension agent for black pod disease control?
- sachet(s) per sprayer
16. Is the efficiency of a fungicide increased when you increase the number of sachets per sprayer?
- Yes
- No
- Don't know
17. Is the efficiency of fungicide increased when mixed with another fungicide?
- Yes
- No
- Don't know
18. Between removing black pods and spraying, which of the following gives the best results?
- They are complementary
- Removing black pods
- Spraying
- Neither
- Don't know

Knowledge of farmer concerning capsid control

19. What time of the year are capsid more abundant on your farm?
-
20. What is the best time of the year for capsid control?
-

21. Does the systematic treatment of all cocoa farms in an area better protect all cocoa farms from capsid?

....Yes

....No

....Don't know

Objective 4: Adoption

Adoption of black pod disease

22. Do you currently practice black pod disease control?

....Yes

....No

....Not applicable

23. Do you spray all your cocoa fields?

....Yes

....No

....Not applicable

24. What dosage do you use?

....sachet(s) per sprayer

....Not applicable

Adoption of capsid control

25. Do you treat against capsid each year?

....Yes

....No

26. Do you participate in collective capsid control?

....Yes

....No

Adoption of spraying the cocoa nursery and removing weeds from cocoa fields

27. Do you regularly spray for insects in your nursery?

....Yes

....No

....Not applicable

28. Do you regularly remove weeds from all your cocoa fields?

....Yes

....No

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